



THEME: INTEGRATION OF ARTIFICIAL INTELLIGENCE IN PRIMARY EDUCATION AND ITS IMPACT ON THE EDUCATIONAL PROCESS

Nazarova Nilufar

Ph.D. student of GulSU

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ABSTRACT

This article explores the integration of artificial intelligence (AI) into primary education and analyzes its impact on the educational process. The study examines the concept of intelligence and artificial intelligence, their historical development, and key characteristics, with particular attention to modern AI technologies such as natural language processing, machine learning, and virtual assistants. Special emphasis is placed on the role of AI tools, especially ChatGPT, in transforming educational practices through personalization, inclusivity, and adaptive learning strategies. The article highlights both the advantages of AI in education—such as individualized learning, support for students with disabilities, and increased student engagement—and the challenges it presents, including teachers' lack of technological preparedness, ethical concerns, misinformation, and students' overreliance on AI systems. Based on the analysis of recent research and practical experience, the article identifies essential competencies required for effective AI integration in education, including AI literacy, agile engineering skills, and critical thinking. The findings suggest that while artificial intelligence offers significant opportunities to improve the quality and accessibility of primary education, its successful implementation requires careful management, teacher training, and responsible use.

Intellect (from the word intellectus, meaning “to perceive, understand, comprehend”) or intelligence is the ability of a person to adapt to new situations, to acquire knowledge through experience and remember it, as well as to solve problems using existing knowledge. Intelligence also allows one to understand abstract concepts and use them in practice.

Intelligence is the set of all cognitive abilities of a person, such as thinking, remembering, imagining, feeling, perceiving, which allows one to analyze and solve problems.

Artificial intelligence (AI) is the field of creating software systems that perform functions inherent in the human mind, namely, processes such as language comprehension, learning, reasoning, problem solving and even translation. Through AI, computers learn from experience,

adapt to situations and perform tasks that previously could only be performed by humans. Today, AI is used in various areas: from chess programs to unmanned vehicles. Deep learning and natural language processing technologies play a key role in this. Through these methods, computers analyze large amounts of data and are trained to perform tasks by identifying patterns in them.

Artificial intelligence has been recognized as the enemy of humanity for various reasons. The movie 'Terminator' horribly shows what can happen when artificial intelligence enters the world. However, like any other technology, artificial intelligence affects us depending on how we use it.

The main characteristics of AI (artificial intelligence, AI) are the ability to understand language, master it, reason, and most importantly, perform practical activities.

Artificial intelligence is a set of high-quality and rapidly developing technologies and processes, including:

- natural language processing
- computer training technologies
- expert software systems
- virtual agent programs (chatbots and digital assistants)

Outdated general definitions of artificial intelligence:

Artificial intelligence is the creation of machines that can perform intelligent activities. (J. McCarthy).

Artificial intelligence is the ability of digital computing machines to solve problems that are closely related to highly intelligent individuals. (Britannica)

Artificial intelligence is the development of intelligent computer mechanisms with the abilities that we usually attribute to the human mind: speech perception, assimilation, logical thinking, problem solving, etc. (Feigenbaum)

Artificial intelligence is the field of science that studies how to train computers to perform tasks that people are currently more successful at. (Elaine Rich)

The term AI was first introduced in 1956 by the American computer scientist, Professor John McCarthy. He proposed a summer research project at Dartmouth College in 1956, which is now known as the Dartmouth Seminar. In recent years, much attention has been paid to the development of artificial intelligence technologies and systems. Although the main research has focused mainly on the technical aspects of artificial intelligence, since the 1960s there has been a consistent study of its social and philosophical implications. According to the Scopus database, the first article to use the term "artificial intelligence" was published in 1962 in the Annals of the American Academy of Political and Social Sciences. The article was titled "Artificial Intelligence: The Frontier of Automation." To date, more than 8,000 articles have been published in journals devoted to business, management, and the social sciences, citing artificial intelligence. Surprisingly, the vast majority of them, 1,538 articles, were produced from 2017 to 2023 alone. Articles from the last five years have received the most citations, which indicates a growing interest in artificial intelligence research in business, management, and social sciences.

V.V. Dovgan, I.V. Robert conducted research on the development and improvement of methodological support for disciplines, the creation of electronic educational resources, and

the organization of educational processes with their help. The theoretical and methodological foundations of informatization of educational processes and the use of information technologies, and the exchange of information in an electronic environment were studied in the scientific works of A.A. Abduqodirov, U.Sh. Begimkulov, G.S. Ergasheva, etc.

The rapid development of information and communication technologies has created new issues and complexities in the process of “rapid development of the virtual environment”.

Artificial intelligence is an integral part of today's technologies, providing the ability to quickly and repeatedly process large amounts of data using intelligent algorithms. The emergence of AI in education began in November 2022 with the introduction of ChatGPT (one of the most powerful AI chatbots by OpenAI). This has significantly changed the landscape of education, marking a new era in the approach to education and the delivery of information. This advanced AI tool has redefined educational paradigms and offered previously unattainable individualization in education. ChatGPT is quickly becoming a game-changer due to its sophisticated language processing capabilities. It learns the unique abilities, strengths and weaknesses of each student. This change is the most suitable educational practice for an individualized learning strategy. GPT and other large language models can analyze student data and use advanced algorithms to create personalized learning experiences that are tailored not only to excellent students but also to each student's learning style, pace, and preferences. This leads to a constantly evolving and productive learning environment where students are actively engaged and participate in learning activities, rather than just passive recipients of information. In addition, AI has shown great potential in supporting students with disabilities. Through this, specialized tools and resources are being provided to address various learning challenges to make education more accessible and inclusive. Students who are unable to participate in traditional classrooms can now take advantage of the ability to tailor the delivery of information through AI to the specific needs of the student, eliminating barriers to learning and fostering a more inclusive learning environment. While adapting to this AI-driven approach poses certain challenges, the benefits for students, teachers, and the education system as a whole are significant. ChatGPT in education can be an important step towards creating a more personalized, inclusive, and effective learning experience, preparing students not only for the academic challenges of today, but also for the evolving era of the future. However, transforming education through AI has many valuable opportunities, but also some negative consequences.

Here are a few of them:

1. Teachers feel redundant because they do not have much knowledge about the technology and how to best use it.
2. Both teachers and students are unaware of the limitations and dangers of the technology (i.e., AI hallucinations can create incorrect answers).
3. Students do not use the technology correctly and hand over their work to the machine instead of acquiring the necessary knowledge.
4. Students do not seek to learn new materials for themselves, but rather want to minimize their efforts.

Based on practical research and an analysis of the current literature, all scholars believe that in order to be ready to use AI in education, we must have three necessary skills. These are knowledge of AI literacy, agile engineering, and critical thinking.

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